Lightening the load:
Toning the Marine Corps' Information Technology

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As I walked into the tent in 2004, I got a puzzled look from the Air Force Tech Sergeant, who asked if he could help me. I, in return, said I was there, in fact, to help him and I offered to give him one or two phone lines. He said he had phones, in fact, he was running phones to the whole airfield (minus my Marines). I didn’t recognize any gear that could supply that many phones and it was just then the young communicator showed me the first REDCOM switch I had ever seen and he gave me a brief class on his switch, then he asked what I was using. This discussion was my introduction to just how far behind the other services Marine Corps’ information technology was and the first time I was ever embarrassed by that knowledge. Today the Marine Corps is just starting to see REDCOM switches in normal use alongside its Cold War era switches, and once again, it is still years behind. The Marine Corps must refocus efforts on developing lighter, simpler, scalable, autonomous, and common information technology for all echelons of Command throughout the MAGTF in order to maintain its expeditionary nature.

CURRENT

Right now, between the various sister services, there is a wide dissimilarity in the employment of information technology[1] (IT) as well as the specific type of IT equipment used. Part of the dissimilarity stems from the unique culture of the Marine Corps. The Marine Corps tends to concentrate on the war fighting functions[2] that are kinetic in nature, and thus it spends a lot of time and money on developing the tools that directly bring physical force to bear on the enemy. Some examples of such tools are the A/H-1Z Attack Helicopter, the F-35 Joint Strike Fighter, and the M777A2 155mm Howitzer. These examples are all violent and hard-hitting tools of war, but they also have something else in common: they are all highly dependent on IT in order to be utilized to their fullest potential. The problem is that the IT infrastructure needed to support those tools is not nearly as expeditious as the tools themselves.

WEIGHT

To be expeditionary, equipment must be able to be moved from its home base or station to anywhere in the world within a

[1] According to the Headquarters Marine Corps' Information Technology Procurement System User's Guide, an "information system" is as follows: *…any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by an executive agency….*

[2] MCDP 1 Warfighting,..Apppendix A-1

timely manner. For the Marine Corps that is understood to mean it must be able to go on either a ship or a military aircraft. Currently though, shipping space aboard either choice of lift is very limited in terms of both cubic feet as well as physical weight.

COMPLEXITY

Just like mailing a package from your local US Post Office, weight and size has much to do with the financial aspect of shipping. With the cost of oil and insurance rising everyday, the less your equipment weights and takes up space, the cheaper, and quicker, it will be to move. While the average company or battalion Commander may not care about the final cost, he will care about the timeliness of the throughput of his equipment.

For an example, to be touched on now and returned to later, the cost of moving a TTC-42 switchboard via C-17 aircraft will be utilized.[3] Although a Cold War era design, the TTC-42 is currently used by the US Marine Corps. It weighs 5,525 pounds, and takes up 805.3 cubic feet of cargo space. Based on this author's calculations it currently costs approximately $9,236.00 in fuel alone to move a TTC-42 (and no other supporting

[3] C-17 information per Wikipedia: http://en.wikipedia.org/wiki/C-17_Globemaster_III
Max fuel load of 35,546 gallons, max flying distance of 2,785 miles and max pay load of 170,900
DOD Energy Monitoring Webpage: http://www.desc.dla.mil/DCM/Files/FY2008StandardPrices_122007.pdf
Cost of JP-8 fuel is $3.08 per gallon.

equipment) from the United States to Kuwait[4] via C-17. Of course in order to make the TTC-42 work, you need more than the switch. You will tens of thousands of pounds in supporting equipment and so you can see that $9,236 is just the beginning.

PROPOSED

As the premiere expeditionary force of the U.S. military, the Marine Corps needs to make a deliberate decision to upgrade all regimental level and below IT infrastructure in order to complement and support the new tools it is currently spending so much on to develop.

While on the surface this conflicts with the Corps tradition of, what LtGen(Ret) Krulak calls in his book First to Fight, institutional "frugality"[5] and "fighting on the cheap"[6]. It need not be exorbitantly expensive. The Marine Corps needs only to take what has already been developed and confer with those who are already using it.

In fact, over time, the suggested Corps-wide IT upgrade is the cheaper solution. Without too much effort, not only will the money be well spent, but the technology also will show a return

[4] 7268 flight miles calculated from: http://www.convertunits.com/distance/from/United+States/to/Kuwait
[5],[5] Victor H. Krulak, First to Fight: An inside view of the US Marine Corps (Annapolis: Naval Institute Press, 1999), 141-149.

on investment, thus supporting the Marine Corps' fiscal traditions mentioned before.

WEIGHT

As shown previously, in the expeditionary world, weight equals cost: the cost of bigger aircraft, bigger trucks, cost of the fuel, cost of maintenance, cost of consumables, cost of manpower, cost in effort, and cost in time.

The only way to cut these costs is to reduce all of the above. Equipment must get lighter and smaller. Aircraft needs to be used in the most efficient way possible to reduce overall costs in fuel and wear on the airframes. Unfortunately, the growing trend is that equipment is getting bigger and heavier and that aircraft are being worn out faster than was estimated.

COMPLEXITY

To make clear the frugality of a Marine Corps wide upgrade of it's IT equipment, another piece of equipment currently in wide use by the US Air Force that does the same job as the TTC-42 will be used as a comparison. The Cisco Systems Call Manager is what enables the US Air Force to utilize the internet to place calls instead of the traditional telephony technology used by the TTC-42. The Cisco AS5350 call manager weighs only 60

pounds and is only .89 cubic feet in size. Based on the same underlying figures as used before, the cost of moving a single Cisco AS5350 from the United States to Kuwait would be only $100.19 resulting in a net savings of $9135.81 in fuel. With the approximate cost of the Cisco Switch being $16,000, the Marine Corps would be able to recoup the cost of the unit in just the amount of fuel saved in deployment and redeployment to and from the United States alone!

With the example given above as but a small preview of what should be happening, the first thing the Marine Corps should do is make the change from traditional telephony to Voice-over Internet Protocol (VoIP) as fast as possible. Traditionally, a Battalion’s Communications Platoon provided three distinct types of services: radio, wire, & data. Today data and wire have become blurred, and in some of our sister services, they are one in the same.

COMMON

Development is often the most expensive part of change. Here though, it does not have to be. To save time and cost, the Marine Corps should do what it has always done: find the people who already have the solution… and make it their own.

In fact, the Marine Corps has already taken the first step by utilizing the SWE-DISH as the reach-back capability organic

to the SWAN program.[7] Also, the Joint Communications Support Element (JCSE) has been using lightweight but powerful VIOP and SATCOM terminals to provide Internet (secure and unsecure), phones, and VTC for a couple years now with great success.[8]

With these new lightweight SATCOM terminals, not only can bandwidth be increased, but also it can be disseminated directly to lower echelons of command for autonomy. Also, as a joint SWE-DISH/SAAB team has proved,[9] connectivity can be provided on the move, thus allowing battalion FWD command posts to have the same phone and data capability as their primary command posts.

COUNTER ARGUMENTS

Admittedly, new technology is initially expensive - not just in terms of the cost of the equipment, but also in the cost of organizational change. Obviously MOS schools will need to be revamped. In some cases, certain occupational fields will need to be retrained and replaced altogether, requiring a Herculean effort by all.

Secondly, a piecemealed approach over time will not work; conversion has to happen across the entire MAGTF, requiring a commitment of funds that are not planned for in current or near-future budgets. That probably means that the Marine Corps must

[7] SWE-DISH website http://www.swe-dish.com/templates/newsPage.asp?id=2352
[8] Expeditionary Warfare School OFEC JCSE breif
[9] SWE-DISH website <http://www.swe-dish.com/templates/newsPage.asp?id=2262>

ask for more funding, something that, as an institution, has never been easy for the Corps to do.[10]

REBUTTAL

With VoIP, what once required either a multi-ton Cold War era switchboard (like the TTC-42) with the dedication of: a multi ton truck to move it, a large forklift to lift it on and off the truck, a dedicated generator to both power the switchboard and it's air-conditioning units, or, a much smaller but still heavy REDCOM switch (see table 1). In addition, besides the switch, the myriad of supporting equipment such as: multiplexers, junction boxes & thousands of feet of various types of dedicated wire, is not required.

	AN/TTC-42	RECOM	VoIP (Cisco AS5350)
# of loops	152	32-768	7500 (per server)
Weight	5,525 lbs	40-50lbs	60 lbs
Cost	$2 Million	UKN	aprx $16,000
Displacment	805.3 CuFt	1.44 CuFt	.89 CuFt
Power Req	30 Amps	1.5 Amp	7.5 Amp

The largest VoIP callamanger is used to point out that the biggest call manager is still significantly smaller then the AN/TTC-42. Less cable VOIP units are smaller still.

Table 1

Phone Services to thousands of users can now be provided with only a few rack-mounted servers and it all runs over the same physical wire as your computer data. Overall, the total footprint and dedicated lift is not only reduced, it is almost eliminated. In reality, a battalion can now have many times the

[10] Victor H. Krulak, First to Fight: An inside view of the US Marine Corps (Annapolis: Naval Institute Press, 1999), 141-149.

capability of what a Division once had so that when operations progress and forces are increased, the hardware is already there to support it.

CONCLUSION

In today's DoD, the buzzword is *expeditionary*. This does not just mean that a unit can physically get to a destination; it implies that a unit is self supportive and can operate immediately. It implies a "do more with less" attitude. The Marine Corps was the very definition of "expeditionary" before the word even existed in the vocabulary of the military. But now, other US services have made a conscious decision jump on the expeditionary bandwagon and, in the case of IT, they are better at it. In order to maintain its edge as the nation's force-in-readiness, the Corps needs its IT as expeditionary as its weapons. With the procurement of the Expeditionary Fire Support System, the OV-22 Osprey, and the SWAN, the Marine Corps is on the right track. Doing more in more austere places is what the Corps is best known for, and by all means that tradition should continue. In support of that tradition, The Corps needs to execute immediately a force-wide upgrade of its tactical IT infrastructure. **1721 WORDS**

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